CLAIMS

1. A method of determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the method comprising for at least one pair of wheels:
   a) determining front and rear wheel speed signals (ω) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;
   b) correlating the front and rear wheel speed signals (ω) in order to determine a specific correlation feature indicative of the time delay (τ) between the front wheel and rear wheel speed signals;
   c) determining the velocity (v) of the vehicle based on said correlation feature and the wheel spacing (B).

2. The method of claim 1, wherein the action of correlating is based on a correlation function (R) of the front and rear wheel speed signals, said correlation function (R) is a function of a time difference (τ), and the correlation feature is the specific time difference which corresponds to the maximum of said correlation function (R), whereby the vehicle velocity (v) is computed from the specific time difference.

3. The method of any one of claims 1 or 2, wherein the action of correlating comprises a compensation with a wheel speed signal (ω) of the front or the rear wheel such that the correlation feature remains unchanged with varying vehicle velocity (v) but changes with varying wheel radius (r) of the respective wheel.

4. The method of claim 3, wherein the action of correlating is based on a correlation function (R) of the front and rear wheel speed signals, said correlation function (R) is a function of the reciprocal ($1/(\omega \cdot r)$) of the product ($\omega \cdot r$) of the known wheel speed signal (ω) and the respective

unknown wheel radius (r), and the correlation feature is the specific wheel radius which corresponds to the maximum of the correlation function (R), whereby the vehicle velocity (v) is computed from the specific wheel radius (r) and the corresponding wheel speed signal (ω).

5. The method of claim 1, wherein the correlation feature is obtained by

a) Fourier transforming the wheel speed signals (ω) to obtain Fourier transformed wheel speed signals (Ω);

b) Calculating a phase function ($\arg(\Omega_1(f)/\Omega_3(f))$) of the ratio of the Fourier transformed wheel speed signals (Ω) of the front and the rear wheel, wherein the slope of said phase function is the correlation feature indicative of the time delay (τ).

6. The method of any one of claims 1 to 5, wherein the front and rear wheel speed signals (ω) are transformed from angle domain to time domain by interpolation without aliasing effects.

7. The method of any one of claims 1 to 5, wherein the action of correlating is based on the reciprocals of the wheel speed signals ($1/\omega$) to perform the action of correlating within the angle domain.

8. The method of any one of the preceding claims, wherein the radii of the front and the rear wheels (r) are determined on the basis of the obtained vehicle velocity (v).

9. The method of any one of the preceding claims, wherein the wheel speed signals (ω) are provided by wheel speed sensors of an antilock braking system (ABS).

10. The method of claim 8 or 9, wherein the absolute wheel radii thus determined are used for tire pressure determination.

11. The method of any one of the preceding claims, wherein the absolute velocity thus determined is used for road-friction monitoring.

12. The method of any one of the preceding claims, wherein the absolute velocity thus determined is used as input for control systems such as ABS, dynamic stability systems, traction control systems, anti-spin systems and AWD/4WD vehicles.

13. A system for determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the system comprising:

a) wheel speed sensors arranged to provide front and rear wheel speed signals (ω) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

b) a correlation unit arranged to correlate the front and rear wheel speed signals (ω) in order to determine a specific correlation feature indicative of the time delay (τ) between the front wheel and rear wheel speed signals; and to determine the velocity (v) of the vehicle based on the wheel spacing (B) and the correlation feature thus determined.

14. A computer program product including program code for carrying out a method, when executed on a processing system, of determining the velocity (v) of a vehicle having at least one pair of a front and a rear wheel which are spaced by a wheel spacing (B), the program code being arranged to:

a) determine front and rear wheel speed signals (ω) indicative of the time dependent behavior of the front and rear wheel speeds, respectively;

b) correlate the front and rear wheel speed signals (ω) in order to determine a specific correlation feature indicative of the time delay (τ) between the front wheel and rear wheel speed signals;

c) determine the velocity (v) of the vehicle based on said correlation feature and the wheel spacing (B).